



# Grid West

## Module 3c Discussion Settlements

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The Structure Group  
2000 W. Sam Houston Pkwy. South  
Suite 1600  
Houston, TX 77042



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***The Settlements discussion will cover the following topics:***

- Objectives
- Assumptions
- Challenges & Considerations
- Service Descriptions
- Process Overview
- Timeline
- Key Concepts
- Capability Summary
- Open Issues

## ***The objectives of the Beginning State Settlements design are:***

- Settle and bill for services provided on a regional basis by Grid West
  - Reconfiguration Service
- Settle and bill for services provided on a consolidated control area basis
  - Reserve Market Service
  - Real-Time Energy Market Service

***Costs will be recovered through a Grid Management Charge (GMC) or membership fee. The GMC will allocate the cost of the services to the participants who use them.***

***The Beginning State Settlements discussion assumes the following:***

- Grid West will provide both consolidated control area (CCA) and Regional services
- These services will be settled separately since not all participants use all Grid West Services
- Multiple settlements will be performed per Operating Day (e.g., Initial, Final, etc.) to allow for participant review and adjustment
- Settlement is calculated for every Operating Day but the process only runs on Business Days
- Invoicing frequency will depend on data availability and cash flow requirements
- Each invoice will contain a summary of all the settlement statements that have been generated since the last invoice
- Grid West will use an unbundled Grid Management Fee to recover costs

***Grid West will administer a voluntary Regional Reconfiguration Service:***

- Payment To Participants Who Sold IWRs
  - Sold IWR Offer MW x Market Clearing Price
- Payment from Participants Who Bought IWRs
  - Awarded IWR Bid MW x Market Clearing Price
- Revenue surplus, if any, will be used to mitigate cost shifting (e.g., Regional Revenue Requirement Adjustment (R3A), etc.)

***Grid West will administer a Reserve Market Service. There will likely be a separate set of calculations for each reserve product (e.g., Regulation, Spinning Reserve, etc.):***

- Reserve Market Payment to Selling Participants
  - Awarded Reserve Offer x Market Clearing Price (for the reserve product)
- Reserve Market Charge to LSEs and Direct Loads
  - Participant Reserve Charge = Participant Reserve Requirement x Market Clearing Price

***Grid West will administer a Real-Time Energy Service:***

- Real-Time Energy Payment to Selling Participants
  - Awarded Real-Time Inc Offers X Real-Time Locational Price
- Real-Time Energy Payment from Buying Participants
  - Awarded Real-Time Dec Offers X Real-Time Locational Price
- Real-Time Energy Charge for all LSEs and Direct Load Customers who are participants in Real-Time Energy Market with CCA
  - Participant Energy Imbalance X Real-Time Locational Price

***Note: Uninstructed Deviation charges still need to be developed***

## ***The Beginning State Settlements have the following challenges & considerations:***

- **Voluntary Markets** – Distinct cost recovery mechanisms are required
- **Cash Flow Requirements** – Settlement frequency needs to consider Participant cash flow requirement
- **Credit Risk Management** – Credit limits must be evaluated regularly to determine participant eligibility. Since the initial buyers of services in the CCA are the participating utilities, does this mitigate risk in reserve and real-time energy markets?
- **Dispute Timeline** – Dispute timelines must be established to balance the need to correct discrepancies with the need to close the books for particular operating days
- **Short Pay & Revenue Neutrality** – How will Grid West deal with short pay scenarios?
- **Meter Data Management** – What meter data will be used in Settlements?

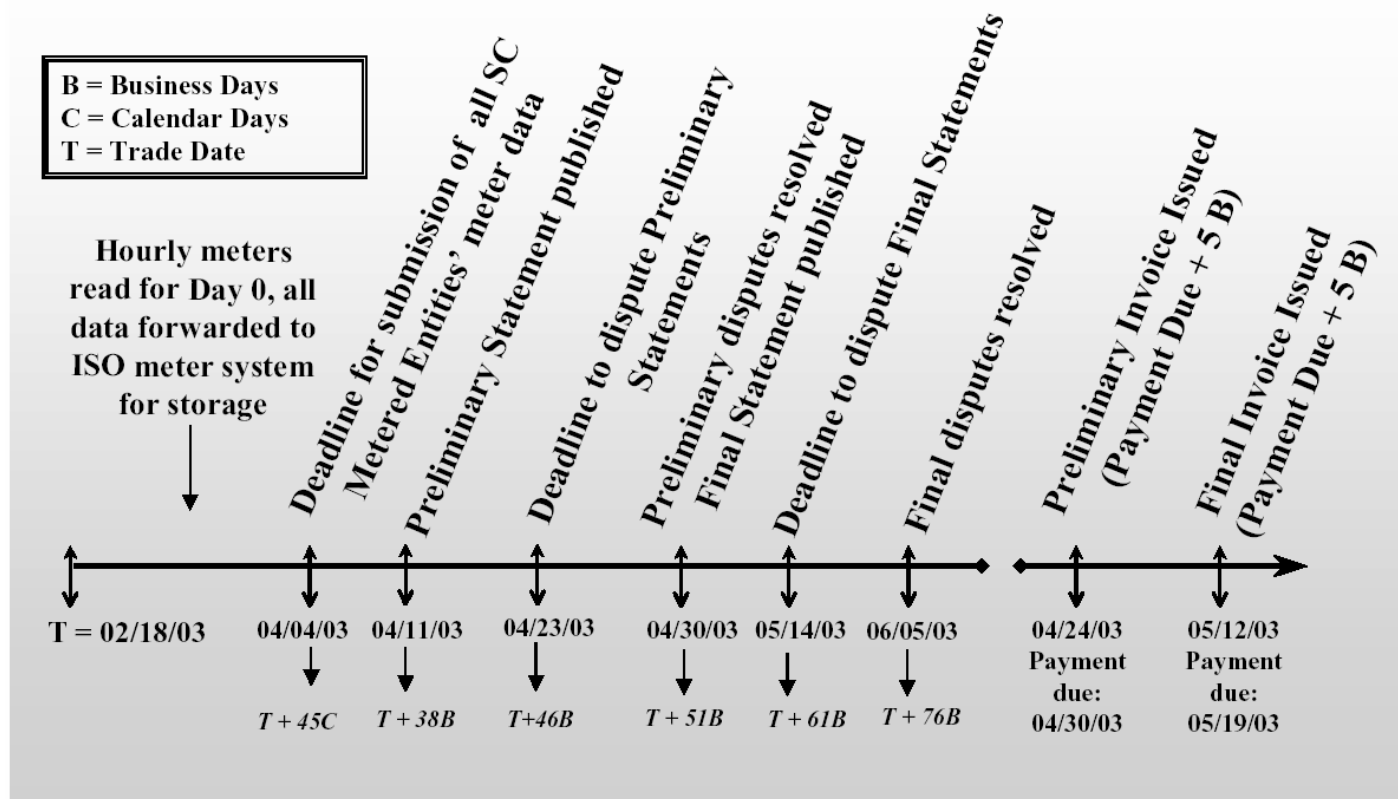


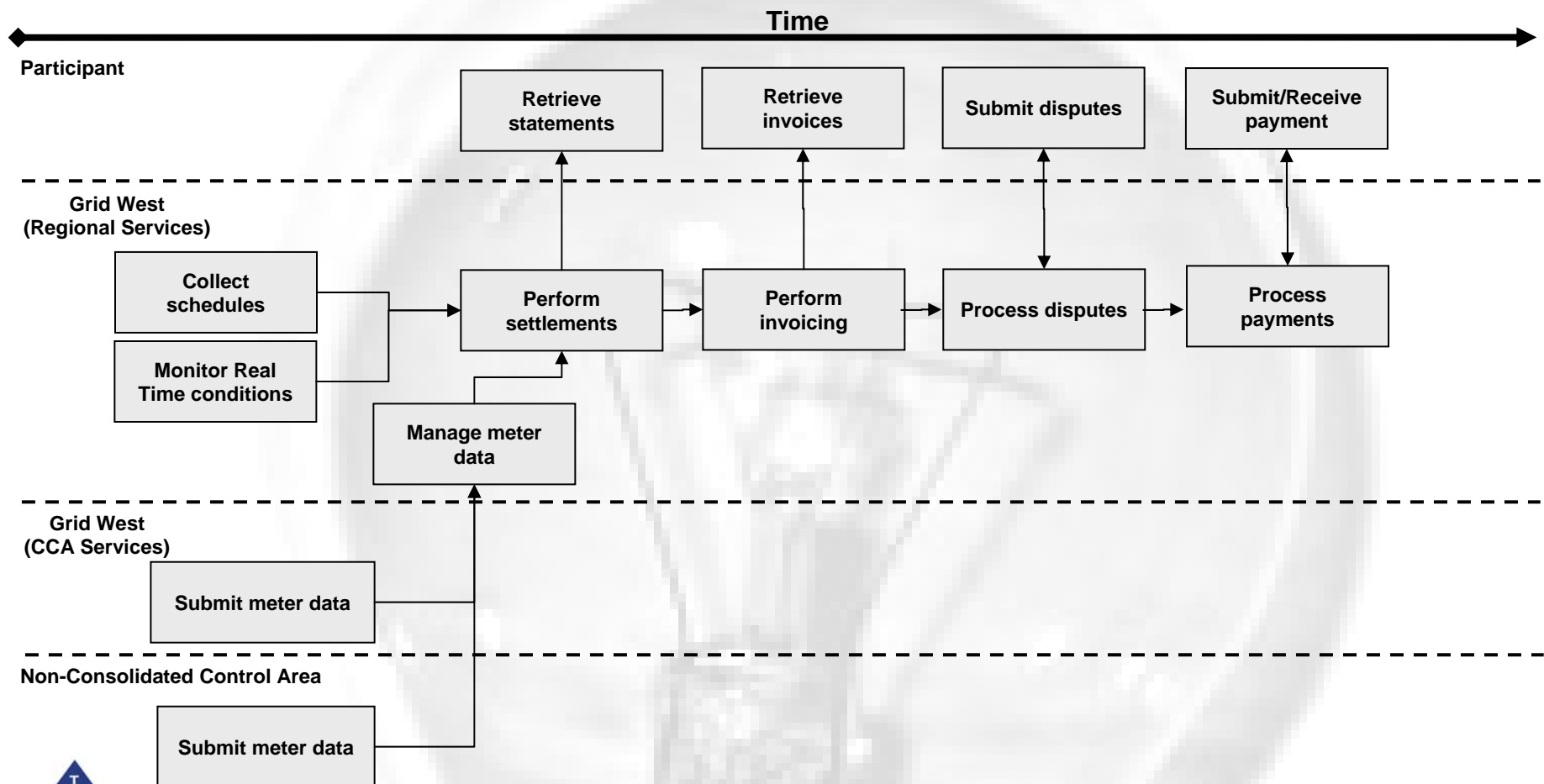
***Grid West may provide the following settlement services:***

<b>Market Settlement Service</b>	<ul style="list-style-type: none"><li>• Regional Reconfiguration Settlement Service</li><li>• Consolidated Control Area Reserve Settlement Service</li><li>• Consolidated Control Area Real-Time Energy Settlement Service</li></ul>
<b>Invoicing Service</b>	<ul style="list-style-type: none"><li>• Invoicing Service</li><li>• Payment Processing Service</li></ul>
<b>Dispute Processing Service</b>	<ul style="list-style-type: none"><li>• Dispute Processing Service</li></ul>

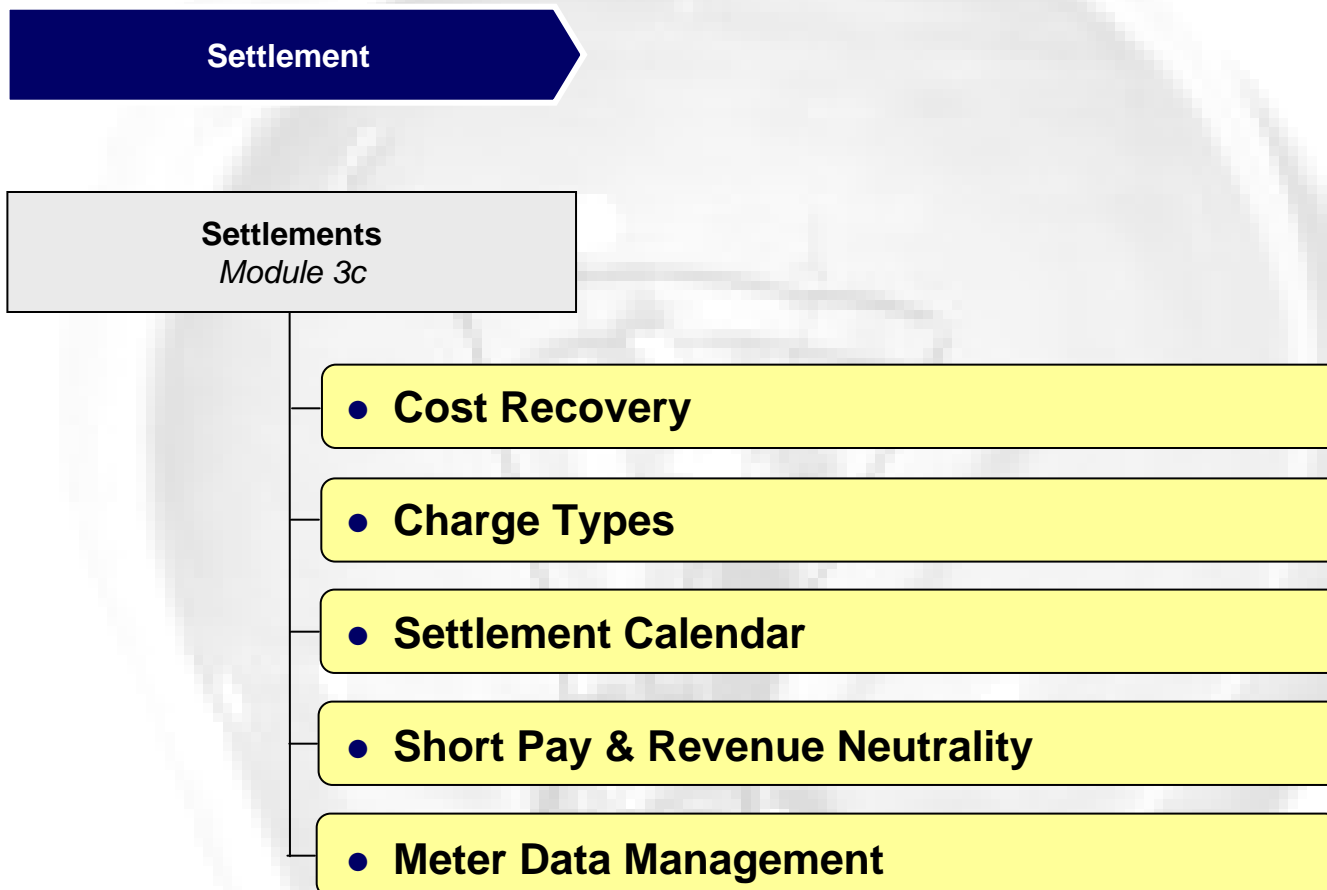
**Settlement timelines are different for every market. The following example is from the CAISO. We will develop a similar timeline in the next round of design.**

## Settlement Process Timeline





***The following Settlements key concepts are explained in additional detail:***



***ISO/RTOs are expected to be revenue neutral and therefore must recover its costs through an administrative mechanism (e.g., Grid Management Charge)***

- Labor & Benefits
- Labor for Capital Projects
- Material, Supplies, Tools & Equipment
- Outside Services
- Utilities, Maintenance & Facilities
- HW/SW License and Maintenance
- Insurance
- Employee Expenses
- Depreciation & Amortization
- Interest & Fees
- Other

***Many of Grid West's services are voluntary, requiring an unbundling of the Grid Management Charge. The following are examples of potential Grid Management Cost Categories:***

- Rights Administration Services
- CCA Services
  - Real-time Energy Market Services
  - Reserve Market Services
  - Settlement Services

***The Grid Management Charge Categories may include the following services:***

<b>Rights Administration Services</b>	<ul style="list-style-type: none"><li>• Tariff Administration Services</li><li>• Scheduling Services Reconfiguration Services</li><li>• Redispatch Services (when implemented)</li></ul>
<b>Consolidated Control Area Services</b>	<ul style="list-style-type: none"><li>• Reliability Services</li><li>• Real-Time Energy Market Services</li><li>• Reserve Market Services</li><li>• Meter Data Management Services</li><li>• Settlements Services</li><li>• Invoicing Services</li><li>• Dispute Services</li></ul>

***As each of the various Grid West Services gets defined in more detail, we will develop a charge matrix to clarify how each charge is calculated. Here is a sample charge-type matrix for Grid West Services:***

Service	Sub-Service	Charge Type	Data Requirements
Reserve Service (Consolidated Control Area)	Regulation	Regulation Up Capacity Payment to MP	<ul style="list-style-type: none"> <li>Awarded Regulation Up Offers</li> <li>Regulation Up Clearing Price</li> </ul>
		Regulation Down Capacity Payment to MP	<ul style="list-style-type: none"> <li>Awarded Regulation Down Offers</li> <li>Regulation Down Clearing Price</li> </ul>
		Regulation Charge	<ul style="list-style-type: none"> <li>Participant Regulation Requirement</li> <li>Regulation Up/Down Clearing Price</li> </ul>
	Non-Spinning Reserve	Non-Spinning Reserve Capacity Payment to MP	<ul style="list-style-type: none"> <li>Awarded Non-Spinning Reserve Offers</li> <li>Non-Spinning Reserve Clearing Price</li> </ul>
		Non-Spin Charge	<ul style="list-style-type: none"> <li>Participant Non-Spin Requirement</li> <li>Non-Spin Clearing Price</li> </ul>
	Spinning Reserve	Spinning Reserve Capacity Payment to MP	<ul style="list-style-type: none"> <li>Awarded Spinning Reserve Offers</li> <li>Spinning Reserve Clearing Price</li> </ul>
		Spinning Charge	<ul style="list-style-type: none"> <li>Participant Spinning Requirement</li> <li>Spinning Clearing Price</li> </ul>
	Replacement Reserve	Replacement Reserve Capacity Payment to MP	<ul style="list-style-type: none"> <li>Awarded Replacement Reserve Offers</li> <li>Replacement Reserve Clearing Price</li> </ul>
		Replacement Reserve Charge	<ul style="list-style-type: none"> <li>Participant Replacement Requirement</li> <li>Replacement Clearing Price</li> </ul>
	Black Start Service *	Black Start Payment to MP	<ul style="list-style-type: none"> <li>Black Start Contract Amount</li> </ul>
		Black Start Charge	<ul style="list-style-type: none"> <li>Total Black Start Payments</li> <li>Participant Load Ratio Share</li> </ul>



Service	Sub-Service	Charge Type	Data Requirements
<b>Reconfiguration Service</b> (Regional)	Reconfiguration Service	Reconfiguration Payment to MP	<ul style="list-style-type: none"> <li>Awarded Offer by Participant</li> <li>Market Clearing Price</li> </ul>
		Reconfiguration Charge	<ul style="list-style-type: none"> <li>Awarded Bids by Participant</li> <li>Market Clearing Price</li> </ul>
		Surplus Revenue Distribution to R3A	<ul style="list-style-type: none"> <li>Surplus Revenue</li> <li>R3A</li> </ul>
<b>Redispatch Service</b> (when implemented)	TBD	Redispatch Payment to MP	<ul style="list-style-type: none"> <li>TBD</li> </ul>
		Redispatch Charge	<ul style="list-style-type: none"> <li>TBD</li> </ul>
<b>Real-Time Energy Service</b> (Consolidated Control Area)	Real-Time Energy Service	Real-Time Energy Payments to MP	<ul style="list-style-type: none"> <li>Awarded Offers by Participant</li> <li>Real-Time Locational Price</li> </ul>
		Real-Time Energy Charge	<ul style="list-style-type: none"> <li>Real-Time Locational Price</li> <li>Dispatch Instructions</li> <li>Generation Meter Data</li> <li>Load Meter Data</li> <li>Dead band</li> <li>Uninstructed Deviation Penalty</li> </ul>

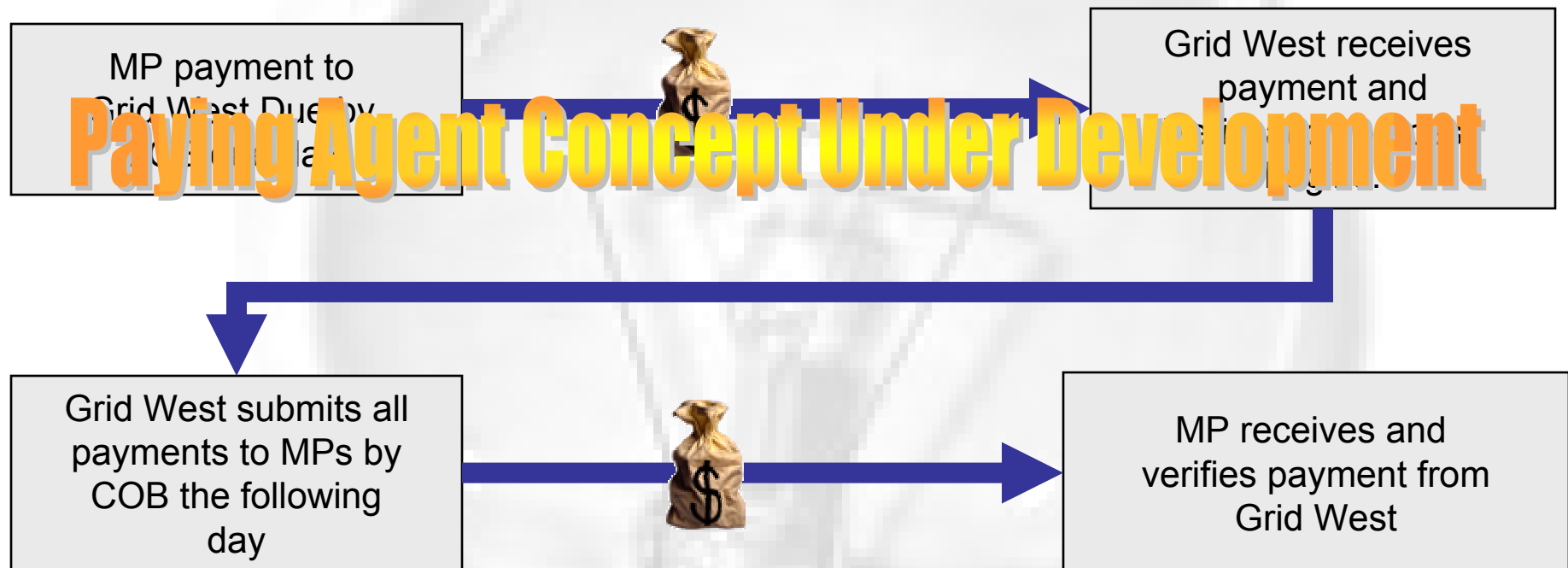
***Grid West may perform an initial, final, and true-up settlement at defined intervals. The following is an example of such a timeline:***

This model assumes that  
Settlements is calculated  
on Business Days

Grid West will most likely  
run multiple settlements  
per day

OD100 SATURDAY	OD101 SUNDAY	OD102* MONDAY	OD103* TUESDAY	OD104* WEDNESDAY	OD105* THURSDAY	OD106* FRIDAY
		OD093 - 7 OD094 - 7 OD095 - 7	OD096 - 7	OD097 - 7	OD098 - 7	OD099 - 7
*14 and 55 Day Statements Not Shown						
OD107 SATURDAY	OD108 SUNDAY	OD109 MONDAY	OD110 TUESDAY	OD111 WEDNESDAY	OD112 THURSDAY	OD113 FRIDAY
		OD100 - 7 (Sat) OD101 - 7 (Sun) OD102 - 7 OD093 - 14 (Sat) OD094 - 14 (Sun) OD095 - 14 OD052 - 55 (Sat) OD053 - 55 (Sun) OD054 - 55 OD002 - 105 (Sat) OD003 - 105 (Sun) OD004 - 105	OD103 - 7 OD096 - 14 OD055 - 55 OD005 - 105	OD104 - 7 OD097 - 14 OD056 - 55 OD006 - 105	OD105 - 7 OD098 - 14 OD057 - 55 OD007 - 105	OD106 - 7 OD099 - 14 OD058 - 55 OD008 - 105
OD114 SATURDAY	OD115 SUNDAY	OD116 MONDAY	OD117 TUESDAY	OD118 WEDNESDAY	OD119 THURSDAY	OD120 FRIDAY
		OD107 - 7 (Sat) OD108 - 7 (Sun) OD109 - 7 OD100 - 14 (Sat) OD101 - 14 (Sun) OD102 - 14 OD059 - 55 (Sat) OD060 - 55 (Sun) OD061 - 55 OD009 - 105 (Sat) OD010 - 105 (Sun) OD011 - 105	OD110 - 7 OD103 - 14 OD062 - 55 OD012 - 105	OD111 - 7 OD104 - 14 OD063 - 55 OD013 - 105	OD112 - 7 OD105 - 14 OD064 - 55 OD014 - 105	OD113 - 7 OD106 - 14 OD065 - 55 OD015 - 105

***Grid West will collect payments for services PRIOR to remitting payments to participants. Depending on the market design, Grid West may pro-rate payments to participants until the remaining funds are received from delinquent participants.***



***Meter data is a required input into several settlement calculations (e.g., imbalance energy, uninstructed deviation, etc.) Participants must submit meter data for the following assets:***

- Generators - Injection volume (MWh) represented by negative (-) values for energy injection and positive (+) value for energy withdrawals.
- Loads - Withdrawal volume (MWh) represented by positive (+) value for energy withdrawals.
- Demand Response Resources - Load reduction volume (MWh) represented by negative (-) value for energy curtailment.

Market Settlement Service	
Description of Function	Settle Markets administered by Grid West. Market Settlements include Reconfiguration, Reserves, and Real-Time Energy.
Timing & Frequency	Settlements will be calculated for each Operating Day; however, the process will be only executed on Business Days. For example, Settlements for Saturday and Sunday will be performed on the following Monday.
Grid West Responsibilities	<ul style="list-style-type: none"> <li>• Retrieve Input Data</li> <li>• Calculate and settle for Grid West market services (Reconfiguration, Reserves, and Real-Time Energy)</li> <li>• Generate &amp; publish settlement statements</li> </ul>
Participant Responsibilities	<ul style="list-style-type: none"> <li>• Submit meter data – This may consist of estimated data, actual data, and/or profiled data</li> <li>• Retrieve settlement statement</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>• Grid West will perform a single settlement until such time that the Day-Ahead Redispatch service is implemented</li> </ul>
ISO / RTO Benchmarks	<ul style="list-style-type: none"> <li>• This is consistent with the ERCOT model. However, other regions with Day-Ahead markets utilize a two-settlement solution where participants are settled once for Day-Ahead quantities and again for the deviations, if any, that occur in Real-Time.</li> </ul>

Invoicing Service	
Description of Function	Invoice participants for all settlement statements that have been generated since the last invoice (in the invoice "window")
Timing & Frequency	The timing has not been determined at this time. It will likely be weekly or monthly depending on cash flow & credit requirements.
Grid West Responsibilities	<ul style="list-style-type: none"> <li>• Generate &amp; publish invoices</li> <li>• Receive payments from participants</li> <li>• Remit payments to participants* (Short-pay scenarios have not been defined yet)</li> </ul>
Participant Responsibilities	<ul style="list-style-type: none"> <li>• Submit payment, if applicable</li> <li>• Receive payment, if applicable</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>• Grid West will generate an invoice for all settlement statements that have been generated since the last invoice.</li> <li>• The invoice will calculate a net position (buyer/seller)</li> <li>• Grid West will pay generators one (1) day after it has received payments from participants</li> </ul>
ISO / RTO Benchmarks	<ul style="list-style-type: none"> <li>• This methodology is consistent with most of the wholesale market designs.</li> </ul>

Dispute Management Service	
Description of Function	Capture and manage settlement disputes to facilitate timely communication on status and resolution.
Timing & Frequency	Disputes must be submitted within the “dispute window” (this window has not been defined yet – but is typically 7-30 days after the receipt of the settlement statement).
Grid West Responsibilities	<ul style="list-style-type: none"> <li>• Provide interface for submission of disputes</li> <li>• Receive and validate dispute</li> <li>• Track and process dispute</li> <li>• Notify participant of dispute resolution</li> <li>• Manually adjust invoice, as required</li> <li>• Resettle the market, if necessary</li> </ul>
Participant Responsibilities	<ul style="list-style-type: none"> <li>• Gather required dispute data (e.g., charge type, date, interval, determinant, etc.)</li> <li>• Submit dispute</li> <li>• Track progress</li> </ul>
Methodology	<ul style="list-style-type: none"> <li>• After a settlement statement is generated, participants will have the ability to submit disputes until the close of the dispute period</li> <li>• If a dispute is approved and requires an adjustment, Grid West will either: <ul style="list-style-type: none"> <li>•Manually adjust the specific participants invoice</li> <li>•Resettle the market using the adjusted data (this only occurs if the error is significant*)</li> </ul> </li> </ul>
ISO / RTO Benchmarks	<ul style="list-style-type: none"> <li>• This is consistent with most of the RTOs/ISOs. PJM is the only RTO that does not have a formal dispute process. In addition, other markets typically set thresholds for resettlement of the market based upon an approved dispute. Specifically, ERCOT will not resettle the market unless the dispute has a 2% or greater impact on the original settlement.</li> </ul>

***The following issues have been identified during the initial round of design:***

- **Tariff Billing** – Who will perform the tariff billing function (Open Module 1 issue)
- **Cost Recovery** – How will the costs of services be recovered? Will any of those costs be up-front vs. collected via GMC?
- **Inadvertent Settlement** – How will inadvertent energy b/t CAs be settled?
- **Generation Behind the Meter** – How will generation behind the meter be accounted for?
- **Settlement Frequency** – Will settlements be calculated 7 days a week or 5 days a week?
- **Invoicing Frequency** – Will invoices be generated weekly or monthly?
- **Settlement of Residual Rights Sales** – How will residual transmission rights be priced?
- **Short-pay scenarios** – How will Grid West handle a short-pay scenario?
- **Public / Transparency Information** – What information does Grid West need to provide to public? Also, what information needs to be provided to support price transparency?
- **Unaccounted for Energy** – Is UFE a concern for Grid West? How will load be accounted for?



***Today we covered the following topics:***

- ✓ Objectives
- ✓ Assumptions
- ✓ Challenges & Considerations
- ✓ Service Descriptions
- ✓ Process Overview
- ✓ Timeline
- ✓ Key Concepts
- ✓ Capability Summary
- ✓ Open Issues